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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/644,066	08/20/2003	Fujio Akahane	Q77069	4346

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EXAMINER

MRUK, GEOFFREY S

ART UNIT	PAPER NUMBER
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2853

DATE MAILED: 04/18/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

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Office Action Summary	Application No.	Applicant(s)	
	10/644,066	AKAHANE ET AL.	
	Examiner	Art Unit	
	Geoffrey Mruk	2853	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
 - If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
 - If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
 - Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 29 March 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-24 is/are pending in the application.
- 4a) Of the above claim(s) 16-24 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-15 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Election/Restrictions

Restriction to one of the following inventions is required under 35 U.S.C. 121:

- I. Claims 1-15, drawn to liquid ejection head apparatus, classified in class 347, subclass 68.
- II. Claims 16-24, drawn to method of manufacturing a liquid ejection head apparatus, classified in class 29, subclass 890.1.

The inventions are distinct, each from the other because of the following reasons:

Inventions I and II are related as process of making and product made. The inventions are distinct if either or both of the following can be shown: (1) that the process as claimed can be used to make other and materially different product or (2) that the product as claimed can be made by another and materially different process (MPEP § 806.05(f)). In the instant case the product claimed could be made by a materially different process such as using mechanical milling to form a plurality of dents in the metal board.

Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification, restriction for examination purposes as indicated is proper.

Because these inventions are distinct for the reasons given above and the search required for Group I is not required for Group II, restriction for examination purposes as indicated is proper.

During a telephone conversation with Darryl Mexic on 29 March 2005 a provisional election was made without traverse to prosecute the invention of a liquid ejection head apparatus, claims 1-15. Affirmation of this election must be made by applicant in replying to this Office action. Claims 16-24 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

Claim Objections

Claims 7 and 10 are objected to because of the following informalities:

1. With respect to claim 7, claim 7 states "each of dents is formed at a portion where is away from the first region by a distance not less than a thickness of the chamber formation plate". The language is considered idiomatic English and the Examiner suggests, "each of dents is formed at a portion that is away from the first region by a distance not less than a thickness of the chamber formation plate".
2. With respect to claim 10, the Examiner suggests, "wherein the first region is located at a center portion of the chamber formation plate while being surrounded by the second region". Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 13 and 14 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 13 recites the limitation "third region" in line 2 of the claim. There is insufficient antecedent basis for this limitation in the claim.

Claim 14 recites the limitation "third region" in line 2 of the claim. There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 2, 4-7, 10-12 and 15 are rejected under 35 U.S.C. 102(b) as being anticipated by Harvey (WO 99/01284).

With respect to claim 1, Harvey discloses a liquid ejection head (page 8, lines 7-14), comprising:

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- a metallic chamber formation plate (Fig. 1 and Fig. 2, element 17), having a first region (Fig. 1 and Fig. 2, location of element 20) in which a plurality of pressure generating chambers (Fig. 2, element 22) are formed, and
- a second region (Fig. 1 and Fig. 2, location of element 16) in which a plurality of dents (Fig. 1, element 16) are formed;
- and a metallic nozzle plate (Fig. 2, element 18), formed with a plurality of nozzles (Fig. 2, element 19), the nozzle plate joined to the chamber formation plate such that each of the nozzles is communicated with one of the pressure generating chambers (page 9, lines 28-32).

With respect to claim 2, Harvey discloses the dents (Fig. 1, element 16) are formed on at least one of main faces of the chamber formation plate (Fig. 2, elements 14, 17).

With respect to claim 4, Harvey discloses each of the dents (Fig. 1, element 16) has a pyramidal shape.

With respect to claim 5, Harvey discloses each of the dents has a conical shape (Fig. 1, element 16).

With respect to claim 6, Harvey discloses a size of each of the dents (Fig. 2, element 16) is not greater than a thickness of the chamber formation plate (Fig. 2, element 17).

With respect to claim 7, Harvey discloses each of dents (Fig. 1, element 16) is formed at a portion where is away from the first region by a distance (Fig. 1, array of element 16) not less than a thickness of the chamber formation plate (Fig. 1, element 17).

With respect to claim 10, Harvey discloses the first region (Fig. 1 and Fig. 2, location of element 20) is located at a center portion of the chamber formation plate (Fig. 1, element 17) while being surrounded by the second region (Fig. 1 and Fig. 2, location of element 16).

With respect to claim 11, Harvey discloses wherein the dents (Fig. 1, element 16) are formed at positions opposed to each other (Fig. 1, array of element 16) with the first region between (Fig. 1, array of element 20).

With respect to claim 12, Harvey discloses the pressure generating chambers (Fig. 2, element 22) are arranged with an interval which is not greater than 0.3mm (page 10, lines 27-29, i.e. nozzle index of 1/144 of an inch).

With respect to claim 15, Harvey discloses the second region (Fig. 2, location of element 16) is provided with a length which is two to five times as great as a pitch of which the pressure generating chamber (Fig. 2, element 22) is arranged side by side (page 10, lines 25-27).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

1. Claims 3 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Harvey (WO 99/01284) in view of Witteveen (US 5,165,061).

Harvey discloses the position of one of the dents (Fig. 1, element 16) formed on one main face of the chamber formation plate (Fig. 1, element 17) and dents arranged on a chamber formation plate.

Harvey fails to disclose the position of one of the dents formed on one main face of the chamber formation plate is made coincident with a position of one of the dents formed on the other main face of the chamber formation plate, when viewed from one of the main faces and the interval of the dents arranged on the chamber formation plate is substantially equal to a thickness of the chamber formation plate.

Witteveen discloses the position of one of the dents (Fig. 3c, element 15) formed on one main face of the chamber formation plate (Fig. 3c, element 10) is made coincident with a position of one of the dents (Fig. 3c, array of element 15) formed on the other main face of the chamber formation plate (Fig. 3c, array of element 10), when viewed from one of the main faces (Column 2, lines 62-67) and dents are arranged with an interval (Fig. 3c, elements 15 and 25) which is substantially equal to a thickness of the chamber formation plate (Fig. 3c, element 10).

At the time of the invention, it would have been obvious to one of ordinary skill in the art to combine the teachings of Witteveen in the print head of Harvey. The motivation for doing so would have been "because the entire thickness of the element is not drilled, extra rigidity is obtained for the thin element 50" (Column 1, line 67; Column 2, lines 1-3; i.e. a rigid chamber formation plate).

2. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Harvey (WO 99/01284) in view of Coulman (US 6,045,215).

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Harvey discloses a chamber formation plate (Fig. 1, element 17).

Harvey fails to disclose the chamber formation plate is comprised of nickel.

Coulman discloses "Many different materials may be used to produce the orifice plate in an ink cartridge system, with the present invention not being restricted to any particular products for this purpose. However, representative and preferred materials suitable for fabricating the orifice plate include a rigid internal support member manufactured from, for example, elemental nickel (Ni)" (Column 1, lines 53-59).

At the time of the invention, it would have been obvious to one of ordinary skill in the art to use the teachings of Coulman in the print head of Harvey. The motivation for doing so would have been to provide a nozzle plate that is a rigid internal support member (Column 1, lines 53-59). Also, since Harvey discloses "The apparatus is formed from four layers, which may comprise the same material or thermally compatible materials" (Page 8, lines 16-18), the chamber formation plate could be from a metallic material.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Geoffrey Mruk whose telephone number is (571) 272-2810. The examiner can normally be reached on 7am - 330pm.


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen Meier can be reached on (571) 272-2149. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

GSM
4/4/2005

GM

 4/14/05
MANISH S. SHAH
PRIMARY EXAMINER